From:	Katrina VanDeusen
To:	Gowers, Joe
Subject:	Response to Ringwood Mines Proposed Landfill Capping Design
Date:	Monday, February 17, 2020 2:26:19 PM
Attachments:	image001.png image002.png image005.png Phytoremediation Services - Whitman -.pdf

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Mr. Gowers,

With respect to the clean-up plan for the 500-acre Ringwood Mines/Landfill Site which is located in the Borough of Ringwood, New Jersey have you thought about adding a component to your capping which will be a win-win for everyone? The site, which is in a forested area with about 50 private homes, includes abandoned mine shafts and pits, an inactive landfill, and other disposal areas. During the late 1960s and early 1970s, areas of the site were used to dispose of waste materials, including paint sludge and waste in drums, from Ford's automobile assembly plant in Mahwah, New Jersey. Sampling of the paint sludge showed that it contained lead, arsenic, chromium and other contaminants. According to the website, EPA's cleanup of the land-based contamination in three areas of the site is in the pre-construction phase. It contains the following elements to address contamination in three areas of the site:

- Peters Mine Pit – Contaminated soil and other material will be removed from around the opening of the mine pit, and the pit will be capped.
- Cannon Mine Pit – The mine pit will be capped.
- O'Connor Disposal Area – The area will be capped, and the Borough of Ringwood plans to build a recycling center on this area of the site.

I am an environmental scientist with over 20 years of professional remedial experience in the New York tri-state area. I have been following this case since I worked on it in the late 90's, and I think I have a solution that not only is cost-effective, but has a whole host of benefits to the ecosystem and the community at large that I would like to share with you.

One of the innovative strategies I use on sites located in an environmentally sensitive natural resource such as this Site is phytoremediation. Phytoremediation uses plants and trees to absorb and metabolize contaminants in soils, groundwater, sediments and surface water bodies. The problem with using old-school capping technologies is that you'll have to maintain and monitor it for decades and encapsulation sometimes leads to the creation of anaerobic conditions that may change the contaminant degradation, or all together stop it.

Phytoremediation can be used to create an organic capping system, which is basically a landscape plan using plants and trees that can break down or absorb the contaminants in the soil. You can also plant species in the lakes to treat sediments. The plants run on solar, so there are no energy costs. The planting

design will be comprised of species normally indigenous to New Jersey that break down or hyperaccumulate metals, but are planted in such a way that they don't achieve the biomass that necessitates harvesting. The natural propagation of these perennial species will promote succession and prevent invasive weeds which would need to be managed on a cap in any case. Talk about a long-term strategy, it will work in perpetuity, without long-term monitoring requirements after the first 3 years, which is equivalent to maintaining 90% survivability and natural success of species for the first three years only. The total cost of remediation is reduced because all you pay for is the grubbing/clearing and installation of new plants and amendments. The plants must be in contact with the impacted soils so there are no additional soil capping requirements which is important in New Jersey because the backfilling of soil needs to be with clean, certified fill. Afterwards you can make the area a natural preserve with hiking trails to promote good will for the community. And I don't have to tell you that the EPA is one of the biggest promoters for green, sustainable, innovative phytoremediation. The EPA has literally wrote handbooks which are the industry standard for this work!

So please consider phytoremediation for a pilot study as one of the caps to see if this will be the best available "technology" for this site. If this sounds good and you would like to learn more, please don't hesitate to contact me. Good luck moving forward in any case.

Yours truly,

Katrina VanDeusen
Senior Project Manager

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